2011

Project Report : Small-Scale Apparel Manufacturer Operations Improvement using Lean tools and Information Technology

Research Project

shinawatra university
FOSTERING INNOVATION

School of Information Technology
Shinawatra University
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Summary report

on

Research Projects

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1. **Project name:**

   Small-Scale Apparel Manufacturer Operations Improvement using Lean Tools and Information Technology

2. **Project duration:**

   August 2011 – December 2011 (5 months)

3. **Background:**

   SP Rich Garment Company is a small-scale apparel manufacturer which produces student uniforms for Thai universities as its core business activity. The company has been established since 2010. Currently the company has staffs capacity of about 50 people consisting of 20 direct hired staffs and 30 outsourcing staffs.

   Due to the fact that the company originally started as cottage industry since 1998 and later on has grown larger in terms of amount of productions and number of employees, many of the management practices, however, have not been revised to suit the new environment. Details inspections of key manufacturing values such as total production units, loss products and labor effectiveness indicate a number of inefficient management practices which ultimately lead to significant loss of revenue. Existing shortcomings can be summarized as follows:

   - Improper inventory records on raw materials needed in production line.
   - No details work records in each stage of the production line.
   - Duplication of the cutting orders.
   - Quantity mismatch between manufacturing products and customer's orders.
   - No details records of the amount of disposed materials during the manufacturing process.
   - No details records of the defective products.
   - No records of the loss products occurred in production line.

   With respect to the mentioned problems, SP Rich Garment Company is in need of the new/improved manufacturing management techniques that could help alleviate or eliminate existing problems without requiring large sum of investment budget.

4. Objectives:

To investigate and apply effective manufacturing management tools and information technologies on key manufacturing processes and assembly line process in order to reduce waste and gain more control over manufacturing process for SP Rich Garment Company.

5. Operational plan:

Project operational plan is described in Gantt chart as follow

Task	Month/2011				
	Aug	Sep	Oct	Nov	Dec
User requirements collection + Onsite data collection	←				
Data analysis		↔			
Software design + Development + operation			↔	↔	
Project report development					↔

6. Project results:

This project aims at improving manufacturer operations of SP Rich Garment Company through the use of Lean's tools and information technology. Here, distribution process is selected as target for improvement as it is considered most essential in this case study. The improvement process begins with applying VSM technique to capture and analyze flow of materials of the current production process then implementing sewing tracking distribution process using Kanban technique using Web-based information system.

In evaluating the developed system, comparisons are made between existing sewing distribution process and the Web-based one using the real production data collected between Nov 2011 and Dec 2011. The study results indicate key improvement of the new manufacturing operations over the existing one as illustrated in Table 1. In addition, Web-based information system allows process' bottleneck to be visually identified and statistically shown the actual loss of materials, hence, future loss can be avoided. Such information also provides the factory's owner an opportunity to evaluate outsource service quality.

Table 1 Key improvement of the new manufacturing management over the existing one

Topics	Existing System	New System
Amount of lost materials	Unknown due to inaccurate record keeping	Amount of losses can be identified immediately after filling in required information
Total production amount	Use 3-4 days to collect data and calculate and usually perform annually	Knowing the total number of products every time new cutting data is added

Amount of material consumed (fabric)	Records existed but have never been utilized	Continuously getting updates on the total amount of fabric usage.
Tracking urgent request products	Require certain amount of time to search from the untidy paper records	Able to identify total amount products responsible by each sewer upon request
Identifying the most inefficient sewer	Unknown due to inaccurate record keeping	Able to identify the total amount of loss products from each sewer upon request

In sum, the results clearly indicate improvements in several areas which are waste reduction due to overproduction, precise controls over distribution of sewing process and identify and track the actual number of product loss in sewing process. Such results reaffirm the idea of using Lean's tools in conjunction with appropriate information management system to efficiently and effectively improve apparel manufacturing process without large investment in expensive and specialist capital machinery.